



MAIL STOP APPEAL BRIEF-PATENTS  
PATENT  
3502-1008

IN THE U.S. PATENT AND TRADEMARK OFFICE BEFORE  
THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of	Appeal No.
Reijo LYLYKANGAS et al.	Conf. 3661
Application No. 10/072,906	Group 1764
Filed February 12, 2002	Examiner H. Tran

METAL REACTOR CELL AND MANUFACTURING  
METHOD THEREOF

**APPEAL BRIEF**

MAY IT PLEASE YOUR HONORS:

1. Real Party in Interest

The real party in interest in this appeal is the current assignee, Ecocat Oy of Vihtavuori, Finland.

2. Related Appeals and Interferences

None.

3. Status of Claims

Claims 27-31 were rejected and are the subject of the present appeal. Claims 1-26 have been canceled.

4. Status of Amendments

No amendments were filed following the Final rejection

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of March 1, 2006.

5. Summary of Claimed Subject Matter

Independent claims 27 and 31 each define a method of manufacturing a metal reactor cell 1 that has overlapping corrugated sheets 2, 3 and a housing 7 (Figure 1 and page 8, next to last paragraph). Reactor cells have channels through which gas passes during treatment of the gas, such as in the purification of exhaust and flue gases (page 1, lines 5-9).

Claim 27 includes preoxidizing the overlapping corrugated sheets (page 4, lines 18-26), and after the preoxidizing step joining the preoxidized sheets simultaneously to each other and to at least part of the housing by resistance welding (page 6, last paragraph). Claim 31 defines a similar method without the simultaneous welding.

6. Grounds of Rejection to be Reviewed on Appeal

Claims 27 and 30-31 were rejected under 35 U.S.C. 103 as unpatentable over USUI 5,620,666 in view of KONO et al. 5,403,558 and CHAPMAN et al. 4,331,631.

Claims 27 and 30-31 were rejected under 35 U.S.C. 103 as unpatentable over MATSUMOTO 6,288,008 in view of KONO et al. and CHAPMAN et al.

Claims 28-29 were rejected under 35 U.S.C. 103 as unpatentable over USUI or MATSUMOTO in view of KONO et al. and CHAPMAN et al. and further in view of CAIRNS et al. GB 1 546 097.

Claims 27-30 were rejected under 35 U.S.C. 112, first paragraph.

Claims 27-30 were rejected under 35 U.S.C. 112, second paragraph.

#### 7. Argument

By way of introduction, the rejections under §103 are traversed primarily because the art does not disclose the step of joining the preoxidized sheets to each other and to at least part of the housing by resistance welding, where the preoxidizing step occurs before the joining step. The prior art discloses that the sheets may be oxidized, but in the prior art the oxidation occurs after the joining step (for the purpose of providing a hold for a catalyst).

Claims 27 and 30-31 were rejected as unpatentable over USUI in view of KONO et al. and CHAPMAN et al.

With regard to claims 27 and 31, USUI does not disclose joining preoxidized sheets to each other and to at least part of the housing by resistance welding, where the

preoxidizing step occurs before the joining step. The reference discloses a method for joining the sheets beginning at column 5, line 42 and does not discuss adding an alumina layer until column 8, lines 11-19. There is no indication in the reference that the sheets are oxidized (the alumina layer) before they are joined to each other, and the assertion that the reference does disclose preoxidation before joining the sheets is a factual error.

By way of further explanation, USUI discloses a method in which the sheets are joined by brazing, or various welding methods (column 7, lines 36-42). The reference does not distinguish the brazing from the welding methods. As is known by those of skill in the art, in order for brazing to work properly, the surfaces to be joined must be free of oxides. The surfaces are cleaned and a pickling bath may be used to dissolve oxides chemically. The pickling bath is especially effective on metals like aluminum that are prone to oxidation.

USUI also disclose (column 8, lines 11-19) that the sheets may contain a layer of alumina ( $\text{Al}_2\text{O}_3$ ). As noted therein, the alumina layer is desired because it can hold a wash-coat layer on which a catalyst is supported.

One of skill in the art, having knowledge that brazing requires an oxide-free surface (and noting that the reference

does not distinguish the welding methods from the brazing) would not add an alumina layer to the sheets before brazing as this would make brazing impossible. Clearly, the step of adding the alumina layer occurs after the sheets are joined, not before.

With particular regard to claim 27, USUI does not disclose the claimed simultaneous welding.

Claim 30 is allowable for the same reasons.

KONO et al. and CHAPMAN et al. were relied upon for other features and do not make up for the shortcomings of the primary reference.

Claims 27 and 30-31 were also rejected as unpatentable over MATSUMOTO in view of KONO et al. and CHAPMAN et al.

With regard to claims 27 and 31, the argument here is basically the same as the rejection based on USUI; MATSUMOTO also does not disclose preoxidation before joining the sheets as claimed.

MATSUMOTO disclose (column 14, lines 14-18) that the sheets can be oxidized to support a catalyst thereon. Significantly, the reference also states that the surface treatment is carried out after the brazing step (column 13, lines 17-19). There is no indication in the reference that the oxidation takes place before the sheets are joined to each other, and the assertion that the reference does disclose this

step is a factual error.

With particular regard to claim 27, MATSUMOTO does not disclose the claimed simultaneous welding.

Claim 30 is allowable for the same reasons.

KONO et al. and CHAPMAN et al. were relied upon for other features and do not make up for the shortcomings of the primary reference.

Claims 28-29 were rejected as unpatentable over USUI or MATSUMOTO in view of KONO et al. and CHAPMAN et al. and further in view of CAIRNS et al. These claims are allowable for reasons set forth above.

Claims 27-30 were rejected under §112, first and second paragraphs. The simultaneous welding in these claims is discussed at page 6, last paragraph. As noted therein, the reaction cell is connected to the housing by resistance welding, and that this resistance welding can preferably be made simultaneously when joining the sheets together by resistance welding. Thus, support for the simultaneously welding in these claims is provided in the specification as filed. Further, one of skill in the art would appreciate from this disclosure that the resistance welding of the sheets to each other and to at least part of the housing may be simultaneous.

In addition, the Examiner objects to the specification. The Examiner questions the "straight cells" at page 1 line 20. As noted at this passage, in the prior art "ceramic reactor cells are only made in form of so-called straight cells." Thus, the passage explains that straight cells are a form of reactor cells. The question posed by Examiner is answered by the context of the passage itself.

The Examiner also questions where the welds 10 to the housing 7 are shown, with reference to page 8, lines 20-21. This question also is not understood because this passage states that the corrugated sheets are connected to the housing 7 by welds 8, 10 and these welds are shown in Figure 1. One of skill in the art will see that welds 8 and 10 are on opposite parts of the housing 7 and that they connect the sheets to thereto.

In view of this, it is believed that the rejections of record cannot be sustained and that the same must be reversed and such is respectfully requested.

The claims involved in the appeal are set forth in the Claims Appendix.

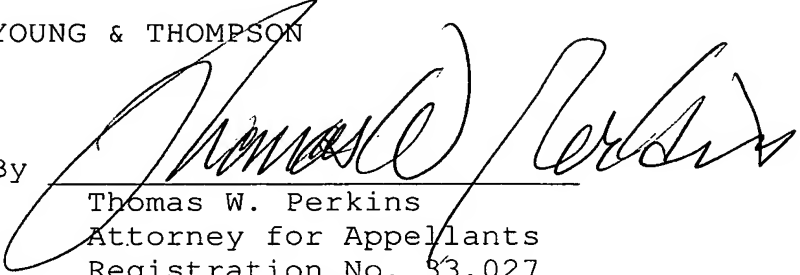
There are no copies of evidence in the Evidence Appendix.

There are no copies of decisions in the Related  
Proceedings Appendix.

Respectfully submitted,

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8. Claims Appendix

The claims on appeal:

1-26. (canceled)

27. A method of manufacturing a metal reactor cell that has overlapping corrugated sheets and a housing, the method comprising the steps of preoxidizing the overlapping corrugated sheets, and after the preoxidizing step joining the preoxidized sheets simultaneously to each other and to at least part of the housing by resistance welding.

28. The method of claim 27, wherein the preoxidizing step comprises the step of annealing the sheets for 0.1 to 10 hours at 500 to 1000°C.

29. The method of claim 28, wherein the preoxidizing step comprises the step of annealing the sheets for 1 to 3 hours at 700 to 800°C.

30. The method of claim 27, wherein the resistance welding step includes the steps of placing an assembly of the overlapping corrugated sheets inside the housing and then simultaneously resistance welding the assembly to the housing and the corrugated sheets to each other.

31. A method of manufacturing a metal reactor cell that has overlapping corrugated sheets and a housing, the method comprising the steps of preoxidizing the overlapping corrugated

sheets, and after the preoxidizing step joining the preoxidized sheets to each other and to at least part of the housing by resistance welding.

9. Evidence Appendix

None.

10. Related Proceedings Appendix

None.